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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,740	06/26/2003	Andrew Perry	019194 00004	9707
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LOCKE LIDDELL & SAPP LLP ATTN: SUE COTT 2200 ROSS AVENUE SUITE 2200 DALLAS, TX 75201-6776				
			EXAMINER ROSENBERGER, RICHARD A	
			ART UNIT 2877	PAPER NUMBER

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/603,740

Applicant(s)

PERRY ET AL.

Examiner

Richard A. Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-10, 13-20 and 23-31 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 3-10, 13-20 and 23-31 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/26/2003.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The reissue oath/declaration filed with this application is defective because it fails to identify at least one error which is relied upon to support the reissue application. See 37 CFR 1.175(a)(1) and MPEP § 1414.

37 CFR 1.175(a)(1), requires that the oath or declaration must include a statement “stating at least one error being relied upon as the basis for reissue”. As set forth in MPEP § 1414 II(c), “Any error in the claims must be identified by reference to the specific claim(s) and the specific claim language wherein lies the error”. The declaration filed with this application does not adequately state at least one error; the language used in the declaration, “Patentee claiming more than right to claim in view of U.S. Patent No. 6,111,634”, does not adequately identify a particular error as a basis of the reissue because it lacks the required specificity.

2. Applicant has attempted to rely on common ownership to disqualify the Pecen et al reference under 35 USC 103(c). That section of the statute states that for such a disqualification occurs “where the subject matter and the claimed invention were, *at the time the claimed invention was made*, owned by the same person or subject to an obligation of assignment to the same person” [emphasis added]. It does not appear there that the statement of common ownership has been made in reference to “the time the claimed invention was made”, but rather only as to the time the statement was filed. As the statement of common ownership relative to the required time period has not been made, the disqualification under 35 USC 103(c) has not been effected, and the Pecen et al reference remains available under 35 USC 102(e). It is noted that were a proper showing of common ownership of obligation to assign at the time the claimed

invention was made filed, then the Pecen et al reference would be disqualified and would no longer be available under 35 USC 102(e) for the purposes of rejections under 35 USC 103.

However, as discussed in section 7 below, as the Pecen et al reference claims the applied subject matter, a question of obviousness-type double patenting would arise.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3, 13, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pecen et al (US 6,111,634).

Independent claims 3, 13, and 23 all contain, in apparatus or in similar method form, the following subject matter, which is taught by Pecan: a flash lamp (705) emitting a broad-band optical radiation (column 12, lines 9-10), a spectrograph (730) responsive to optical radiation reflected from the wafer (column 12, lines 29-32), a data processing element (760) for processing a first signal from the spectrograph, the first signal representative of emitted optical radiation reflected from the wafer, and determining a process parameter (thickness and/or index of refraction; see column 12, lines 66-67). The Pecen et al reference explicitly states that the beam incident on the wafer may be collimated (column 12, lines 21-23);

The preamble of these claims all contain a reference to determining process parameters during "a plasma etch process" (claims 3, 4, 9), a "plasma deposition process" (claims 13, 14,

19), or “a plasma process” (claims 23, 24, 29, 30). However, there is no plasma processing structure or processes claimed in any of the claims, nor is there any structure claimed in these claims that makes the instrument particularly adapted for plasma processing, thus this preamble language is not brought into the scope of these claims and is no more than non-limiting statements of intended use.

As in claims 3, 13, 23, the Pecen et al reference states that the beam incident on the wafer may be collimated (column 12, lines 21-23), but does not appear to explicitly teach that the beam be directed normally onto the wafer. However, the reference clearly suggests that the light be directed normally onto the wafer; this is shown in figure 9, and the statement in column 12, lines 25-27 referring to figure 7 that the lens “focuses the light back on the optical fiber” also suggests that the light be normal on the wafer, and that the reference intends that the light be normal on the wafer.

As for claims 4, 14 and 24, the Pecen reference does not explicitly state that the integration period of the spectrograph is synchronized with the flash lamp. It would have been obvious to synchronize the spectrograph with the flash lamp because the purpose of the instrument is to measure light from the flash lamp reflected from the wafer and this cannot be done when the flash lamp is not on; that is, when the on-period of the flash lamp is synchronized (at the same time as) the integration period of the spectrograph. Further, were the disclosed and intended reflection measurements made not in synchronism with the flash lamp, then part of the measurement by the spectrograph would likely be made when the light is not on and thus would

not be measuring the reflected light and would therefore be subject to lower quality and errors due to ambient light and the like.

5. Claims 5-8, 15-18, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pecen et al (US 6,111,634) in view of Gram et al (US 5,461,236).

Pecen shows a system similar to that claimed (see above), but does not discuss the measurement of the background when the lamp is turned off and the subtraction of this background signal from the measurement signal when the lamp is on. Gram discloses that it is in general known to obtain a background ambient light measurement when the lamp is off and subtracting this value from the measurement value to eliminate noise signals (see column 7, lines 14-20). It would have been obvious to use this known technique for improving accuracy of the measurement in the system of Pecen et al in this known manner.

As in claims 6, 16 and 26, Pecen et al discloses measuring and using the intensity of the emitted light to normalize the signals (see column 12, lines 12-17 and lines 57-61).

As to claims 7, 17 and 27, Pecen et al discloses using the normalized signals to determine the process parameter (column 12, lines 61-64).

As in claims 8, 18 and 28, the process parameter measured by the Pecen et al reference is thickness of a layer on the wafer (abstract, lines 8-9).

6. Claims 9-10, 19-20, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pecen et al (US 6,111,634) in view of Morrison et al (US 5,403,433) and Manning et al (US 4,968,142).

See above for a discussion of the Pecen et al reference

As with the claims above, the plasma processing in the preamble of these claims is presented only in terms of intended use, not as a positively recited limitation; the claims are not limited to use with plasma processing. These claims are limited to determining “an etch rate” (claims 9-10, 29) or a “deposition rate” (claims 19-20, 30-31), but do not contain sufficient structure related to the use of *plasma* etching or deposition, as distinguished from other forms of etching (such as chemical etching, mentioned in the instant specification, column 1, lines 19-21) or deposition, to bring the disclosed use with *plasma* etching or deposition into the claim. However, as evidenced by the preamble, the claims include, and are intended to include, plasma etching and deposition within their scope.

As for claims 9, 10, and 29, Pecen et al teaches using the measuring instrument to determine a removal rate (abstract, line 10), but discloses that the removal is being done by a chemical mechanical polishing process rather than by an etch process as in those claims. A plasma etch environment differs from the chemical mechanical process of the Pecen reference in that the plasma will exhibit its own emission spectrum, which will then combine with the light reflected from the wafer being processed and thus, unless it is taken into account, will interfere with the measurement. It is, however, known in the art that such interfering spectra can be taken into account by subtracting a reference spectrum from the measured spectrum in order to obtain

the measurement spectrum of interest. Morrison et al shows a plasma processing chamber (12; see column 8, line 20 for a disclosure that the disclosure includes plasma processing) which can be used for etching (column 8, line 17). Morrison et al includes a spectrometer (22) which can measure the object in the chamber. Morrison et al notes that there can be a problem with optical interference from the processing environment with the measurement (column 11, lines 45-55), noting that the interference can, at times, even "overwhelm" the features desired to be measured (column 11, lines 53-55). Morrison et al states that the measurement of the characteristics of interest, which can be thickness (column 9, line 1), are "generally" made "using spectra corrected for ambient gas absorption and emission bands by base-line subtraction" (column 9, line 8), and teaches that the system "will normally incorporate means for obtaining reference spectra for reflectance, transmittance, radiance, and radiance background" (column 9, lines 9-11). Morrison et al discusses the subtraction of such "reference spectra" in the paragraph bridging columns 11 and 12; although this portion of the disclosure explicitly deals with interference with absorption, the disclosure taken as a whole, in particular the section bridging columns 8 and 9, treats such "base-line subtraction" as equally applicable to interfering emissions (see, for instance, column 9 lines 7-8 and 10-11, which treats absorption and "emission" or irradiance" together).

Further, those in the art know that the unwanted emissions from a plasma can be removed from a measurement spectrum; see Manning et al, which teaches that the "spectra of the known plasma gas can be subtracted from the overall spectrum in order to derive the sample spectrum" (column 1, lines 12-14). Although the sample spectrum in Manning et al is itself an emission spectrum, the Manning reference further demonstrates, along with Morrison above, the general

knowledge and practice of those in the art of removing an interfering plasma spectrum from a measured spectrum to obtain a sample spectrum for analysis.

It would have been obvious at the time the invention was made to us the known thickness measuring system of Pecen et al in a plasma etch system because it is a known monitoring system performing a test known to be useful in the art. Although those in the art would recognize that the plasma emission could interfere with the spectroscopic measurement of Pecen et al, they are not only aware of the problem but of a solution as well, as demonstrated by the Morrison et al and Manning et al references. Thus those in the art would have found the use of the monitoring system of Pecen in a plasma system obvious because, as shown by Morrison and Manning, they know how to make it work in a plasma environment.

As for claims 19-20 and 30-31, the claims call for determining a "deposition rate" rather than an "etch rate". It would have been obvious to make the same sort of measurements of thickness and the like in a deposition process because those in the art know that it is as useful to know the thickness of a layer being deposited as it is to know the thickness of a layer being removed. In both cases, if the processes is ended too soon or too late the overall product being produced will be defective. As it would have been obvious to use the system of Pecen et al in a plasma etch process, as discussed above, so would it have been obvious to use it in a plasma deposition process because in both there is the recognized need to make this type of measurement, and in both the common problem of plasma emission can be dealt with in the same manner as discussed above.

Claims 10, 20, and 31 call for the determined process parameter to be an endpoint; Pecen et al mentions that the thickness measurement can be used to determine an endpoint (column 14, lines 33-44 and 44-46).

7. As discussed in section 2 above, Applicant has attempted to use the common ownership at the time the invention was made of this case and the Pecen et al patent to disqualify the Pecen et al reference under 35 USC 103(c). However, should the showing of common ownership at the time the invention was made succeed in disqualifying the Pecen et al reference, the question of double patenting of the obvious type would arise; it does not arise at this time because there is no overlapping inventorship between the two and there is no proper showing of common ownership at the time the invention was made. The Pecen et al reference generally claims, in claim 11, which includes through dependency all of the limitations of claims 1 and 10, what is generally claimed herein, it claims the flash lamp (Pecen et al, claim 11), the spectrograph (Pecen et al, claims 1 and 10) which receives light reflected from a substrate being measured (claim 1), and a data processing element (claim 10) to determine a process parameter (thickness, claims 1 and 10). For substantially the reasons given in the statements of the rejections above, what is claimed herein would have obvious over this claimed subject matter.

As applicant is hereby put on notice of the possibility of the necessity such a rejection, and is being afforded the opportunity to obviate the possibility of such a rejection by filing an

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terminal disclaimer or other appropriate action, should the rejection be required upon the response to this action, the next action will be made final.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

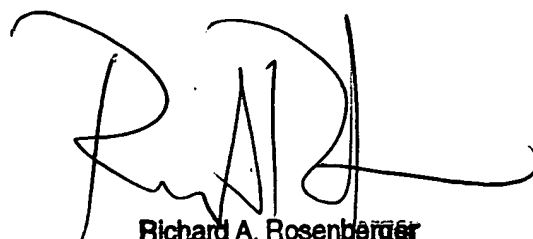
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
20 May 2005



Richard A. Rosenberger
Primary Examiner